

REMARKS

Claims 74, 75, 78, 79, 88, 92, 93, and 95-97 are cancelled herewith without prejudice. Claims 72, 73, 76, 80-87, 94 and 98 are amended. Claim 99 is newly added. Claims 72, 73, 76, 77, 80-87, 89-91, 94, 98 and 99 are in the application for consideration. A marked up version of the amended claims and the amended portions of the specification, to show all the changes, is attached hereto on pages separate from the amendment in accordance with 37 CFR 1.121(b), (c). No new matter has been added to the application by the amendments made. Further, an appendix of the currently pending claims is provided.

Specification

In paragraph 2, the Office Action objected to the abstract of the disclosure stating that it contains legal phraseology. Applicants amend the specification where it is believed appropriate.

In paragraph 3, the Office Action objected to the specification stating that it failed to contain a description for Figure 34 in the "Brief Description of Drawings" section. Applicants amend the specification where it is believed appropriate and do not believe any new matter has been added.

Claim Rejections – 35 U.S.C. §112, second paragraph

In paragraph 5, the Office Action rejected claims 72-98 under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. With respect to claims 72 and 87, the Office Action stated that "said first solution zone" lacks antecedent basis. With respect to claim 74, the Office Action stated that "the step of applying reagent" lacks antecedent basis. With respect to claim 81, the Office Action stated that "reagent" lacks

antecedent basis. Applicants have amended claims 72, 74, 81 and 87 in order to overcome the rejections.

Rejections based on the Saunders reference

In paragraph 7, the Office Action rejected claims 72, 74-75, 77-78, 87-91, and 96-98 under 35 U.S.C. §102(b) as being anticipated by Saunders (U.S. Patent No. 4,483,882). In paragraph 11, the Office Action rejected claims 73, 79-85, 92-93 and 95 under 35 U.S.C. §103(a) as being unpatentable over Saunders (U.S. Patent No. 4,483,882) in view of Gibbs et al. (U.S. Patent No. 3,854,703). The Saunders reference teaches a method for preparing blood spreads for microscopic examination. The mixing of chemicals with the blood spreads is performed using a spinner. The Gibbs reference teaches the use of air “to agitate pools 17, containing specimen material and reagent, distributed along the upper surface of the specimen support tape 2.” Col. 2, lines 50-52. “As a pool of the specimen material passes under one of the single outlets [for air] that pool tends to be flattened out and pushed aside from the center of the tape, and as the pool subsequently passes under an outlet-pair the pool is pushed back once more towards the center of the tape (see FIG. 3).” Col. 2, line 65 – Col. 3, line 4. Thus, the air mixing used in Gibbs initially pushes the liquid to one side of the tape and then pushes the liquid back to the center of the tape.

One aspect of the present invention, as currently claimed, is directed to an improved method for automatically staining a biological sample without dehydrating the biological sample. To that end, the current aspect of the invention, as claimed, recites a method of staining a biological sample by “sending at least one stream of air to a surface of the evaporation-inhibiting liquid phase”. See claim 72. This method of mixing to stain the sample is not taught or suggested by the Saunders reference. The Saunders reference fails to

teach or suggest using an air jet to mix a sample or using an evaporation-inhibiting liquid phase when mixing the sample, as recited in the claims. Similarly, the Gibbs reference fails to teach or suggest using an evaporation-inhibiting liquid phase, moving an evaporation-inhibiting liquid phase in order to stir the reagent with the biological sample, and stirring without dehydration of air. Instead, Gibbs teaches stirring using only reagent and the specimen and stirring by pushing the liquid from one side of the sample to the other, thereby potentially dehydrating the sample. Thus, the claims as currently drafted distinguish over the Sauders and Gibbs references.

Rejection based on the Mazza reference

In paragraph 7, the Office Action rejected claims 72, 77, 79-80 and 84-85 under 35 U.S.C. §102(b) as being anticipated by Mazza et al. (U.S. Patent No. 4,815,978). The Mazza reference teaches the mixing of a reagent in a diluent using an air jet. A reagent tablet is dispensed into a cuvette, after which diluent is dispensed into the cuvette. A biological sample and then a second reagent are added to the cuvette. The goal of the Mazza reference is to mix the reagent, which is immiscible in the diluent, so that it is suspended within the diluent. To that end, an air jet is directed at an acute angle at the junction of the liquid surface in the cuvette with the cuvette wall (as shown in Figure 9 of the Mazza reference). The air jet hits the meniscus at this junction causing a vortex to be formed, thereby mixing the reagent within the diluent.

By contrast, the current invention as claimed recites a biological sample that is “on a support medium” “substantially covered by a first aqueous solution” with “an evaporation-inhibiting liquid phase covering the first aqueous solution”. See claim 72. The improvement comprises “dispensing a reagent onto either the support medium or the evaporation-

inhibiting liquid phase". The improvement further comprises "sending at least one stream of air to a surface of the evaporation-inhibiting liquid phase to move the evaporation-inhibiting liquid phase, thereby stirring the reagent with the biological sample on the support medium while preserving the biological sample from dehydration from the stream of air." Thus, the motion imparted on the evaporation-inhibiting liquid phase is translated to the liquids underneath. The effect is stirring of reagent with the biological sample without dehydrating the sample. This is in contrast to the Mazza reference which is not concerned with dehydration of the sample. The Mazza reference teaches the use of a cuvette, not a support medium. The cuvette fully encloses the biological sample in fluid so that, while stirring, the sample is not at risk of dehydration. Further, the Mazza reference does not teach the use of an evaporation-inhibiting liquid or teach the use of an indirect method of mixing the reagent with the biological sample (by moving the evaporation-inhibiting liquid with an air jet, thereby imparting motion to liquids lying underneath). Instead, Mazza teaches the direct mixing of the reagent with the biological sample. As shown in Figure 9, the air jet is directed to the surface of the liquid (containing the reagent) in the cuvette so that the reagent is mixed with the biological sample. Thus, the claims as currently drafted distinguish over the Mazza reference.

reagent
is
not necessary
stirred
if reagent
dispensed
on
support
medium

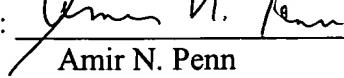
claim does
not
restrict

Conclusion

In view of the foregoing remarks, it is respectfully submitted that the presently pending claims in the application are believed to be in condition for allowance and patentably distinguish over the art of record. An early notice thereof is earnestly solicited.

Respectfully submitted
McDonnell Boehnen Hulbert & Berghoff

Dated: October 8, 2002

By: 
Amir N. Penn
Reg. No. 40,767